



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/564,980	01/18/2006	Kaoru Yamada	2006-0044A	6129
513 7590 12/04/2008 WENDEROTH, LIND & PONACK, L.L.P. 2033 K STREET N. W. SUITE 800 WASHINGTON, DC 20006-1021				
EXAMINER WALDBAUM, SAMUEL A				
ART UNIT		PAPER NUMBER		
1792				
MAIL DATE		DELIVERY MODE		
12/04/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/564,980

**Applicant(s)**

YAMADA ET AL.

**Examiner**

SAMUEL A. WALDBAUM

**Art Unit**

1792

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10/14/08.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 62-70 and 73-97 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 62-70, 72 and 73 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Allowable Subject Matter***

1. The indicated allowability of claims 62-70 and 72-97 is withdrawn in view of the newly discovered reference(s) to Davies et al (U.S. 7,350,315). Rejections based on the newly cited reference(s) follow.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

**Claims 62, 67-70, 72-74, 85, 88-89 and 91 are rejected under 35 U.S.C. 102(e) as being anticipated by Davis et al (U.S. 7350,315, hereafter '315).**

3. Claim 62: '315 teaches a spin rinse drying apparatus for cleaning a substrate (col. 1, lines 55-65, col. 8, lines 45-65), a substrate holder composed of rollers spaced around the substrate (fig. 2 and 9, part 102) where the roller are shaped to hold the wafer in a groove (fig. 2 and 5, the wafer is held by the wedge shape roller), a holder suction unit operable to suction fluid from the clamp portion of the roller (fig. 5, part 120, col. 4, line 39-col. 6, line 25), connected to a vacuum source (col. 6, lines 10-25).

4. Claim 67: '315 teaches that the roller holds the wafer by friction (fig. 2, col. 4, lines 1-40, the wafer are rotated by the roller, but they rest in the groove of the roller, thus roller friction holds the wafer in position).

5. Claim 68: '315 teaches that the holder suction unit is adjacent to the roller (fig. 5).
6. Claims 69, 70 and 72-73: '315 teaches that there is holder suction unit for each roller (fig. 9) and that each suction unit is composed of a plurality of nozzles (fig. 5, parts 128a-c, col. 5, lines 35-55) where the suction nozzle is less than a 1 mm from the roller (col. 7, lines 40-60, therefore since it less than 1 mm it is less than 5 mm).
7. Claim 74: '315 teaches that the holder suction unit is also capable of providing cleaning fluid to the clamp portion of each roller (col. 6, lines 1-13).
8. Claim 85: '315 teaches that the fluid is being suctioned is a liquid and that the suction unit is operable at different times, thus not when the fluid is being supplied (col. 8 lines 45-col. 9 line 50).
9. Claim 88: '315 teaches that the clamp portion comprises an annular groove that extends completely around the roller (fig. 2, col. 4, lines 1-40).
10. Claim 89: '315 teaches holding a wafer in the roller by a clamp portion of the roller (fig. 2), applying a fluid to the wafer as it rotates (col. 8, lines 45-68, col. 9, lines 1-45), rotating the substrate (col. 8, line 45-col. 9, line 50), and a suction unit for suctioning up the fluid transferred from the wafer to the roller to the suction unit (col. 4, lines 1-67) with the suction unit in communication with a vacuum source (col. 6, lines 10-25).
11. Claim 91: '315 teaches supplying a cleaning fluid to the to the clamp portion (col. 6, lines 1-25).

***Claim Rejections - 35 USC § 103***

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 1792

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

**Claim 86 is rejected under 35 U.S.C. 103(a) as being unpatentable over Davis et al (U.S. 7350,315) as applied to claim 62 above, further in view of Kress (U.S. pgpub 2002/0153735, hereafter '735).**

14. Claim 86: '315 teaches that the suction manifold can be made out of plastic or any other suitable material that is corrosion resistant (col. 4, line 65-col. 5, line 10). '735 is solving the same problem as the applicant's of determine material for a vacuum tip. '735 teaches that the vacuum tip is made of a conductive material that is grounded to protect from electrostatic discharge ([0032]). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have made conductive ground material as taught by '735 as the material for vacuum tip for apparatus '315 to have protected from electrostatic discharge.

**Claim 87 rejected under 35 U.S.C. 103(a) as being unpatentable over Davis et al (U.S. 7350,315) as applied to claim 62 above, further in view of Inaki et al (U.s. pgpub 2002/0106518, hereafter '518).**

'315 teaches all the limitations of claim 62.

15. Claim 87: '315 does not teach what the composition of the roller. '518 is a wafer cleaning devices. '518 teaches that a wafer chuck can be made out of flouoresin material to give the chuck multiple restive properties from corrosion, heat, chemical and wear ([0009]). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a flouoresin as taught by '518 as the material for the rollers in apparatus '315 to have given the roller multiple resistance properties.

**Claims 63, 65, 66 and 90 rejected under 35 U.S.C. 103(a) as being unpatentable over Davis et al (U.S. 7350,315) as applied to claim 62 above, further in view of Saito et al (U.S. pgpub 2005/0092351, hereafter '351).**

'315 teaches all the limitation of claim 62.

16. Claim 63 and 90: '315 does not teach a periphery suction unit. '351 is a substrate processing apparatus. '351 teaches a periphery fluid applicator and suction unit (fig. 8, fluid applicator, part 15, suction unit, part 20, [0060]-[0068]), thus allowing the periphery of the substrate to be cleaned and have that fluid removed, thus drying the periphery ([0060]-[0068]). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a periphery fluid applicator and suction unit as taught by '351 in apparatus '315 to clean and dry the periphery of the substrate.

17. Claim 65: '315 teaches that a suction unit which engages the rollers is separate form the fluid applicator (fig. 9) with each roller having their own suction unit (fig. 9). '351 teaches that the periphery suction unit is separate from and spaced a part from the rollers (fig. 8). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have made the holder and periphery suction units in to separate units.

18. Claim 66: `315 teaches that the holder suction unit comprises a nozzle (fig. 5, parts 128a-c) and `351 teaches that the periphery suction unit comprises a nozzle (fig. 8, part 21).

**Claims 64 rejected under 35 U.S.C. 103(a) as being unpatentable over Davis et al (U.S. 7350,315) in view of Saito et al (U.S. pgpub 2005/0092351,) as applied to claim 63 above, further Kress (U.S. pgpub 2002/0153735).**

`315 teaches all the limitation of claim 63.

19. Claim 64: See claim 86 above.

**Claims 75-76 and 92 rejected under 35 U.S.C. 103(a) as being unpatentable over Davis et al (U.S. 7350,315) as applied to claim 62 above, further in view of Furusawa et al (U.S. 6,220,935, hereafter `935).**

`315 teaches all the limitation of claim 62.

20. Claims 75, 76 and 92: See claims 69 above. `315 does not teach that the holder suction unit has nozzles located in forward of the supply nozzle. `935 is a substrate processing apparatus who is cleaning the rollers used to rotate the wafer. `935 teaches supplying fluid to the rollers (fig. 2, part 30, col. 4, lines 15-25) to clean the contact position between the roller and the wafer (fig. 2, col. 4, lines 15-25). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used separate liquid supply nozzles as taught by `935 spaced near the rollers and forward of the rotation of the roller such that the suction unit is in front of the fluid applicator apparatus `315 to have cleaned the contact point between the roller and the wafer and to have removed the liquid after it has been applied to the rollers.

**Claims 77 and 93 rejected under 35 U.S.C. 103(a) as being unpatentable over Davis et al (U.S. 7350,315) as applied to claims 62 and 89 above, further in view of Maekawa et al (U.S. 5,868,866, hereafter '866).**

'315 teaches all the limitation of claim 62 and 89.

21. Claims 77 and 93: '315 teaches a drying gas to the roller (col. 6, lines 1-25) but not to the substrate. '866 is a substrate processing apparatus. '866 teaches using a drying gas to dry the substrate (col. 5, line 65-col. 6, line 5). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a drying gas as taught by '866 in apparatus '315 to dry the substrate.

**Claims 78-82 and 94-97 rejected under 35 U.S.C. 103(a) as being unpatentable over Davis et al (U.S. 7350,315) in view of Maekawa et al (U.S. 5,868,866) as applied to claims 77 and 93 above, further in view of Mertens et al (U.S. pgpub 2002/0130106, hereafter '106).**

'315 and '866 teach all the limitation of claim 77 and 93.

22. Claims 78 and 94: '315 and '866 do not teach the particulars of supplying the drying gas. '106 is a substrate processing apparatus. '106 teaches that a gas can be supplied perpendicular to the surface of the substrate (fig. 1, part 4, [0049], [0050]). It would have been obvious to one of ordinary skill in the art at the time the invention was made that the gas can be supplied perpendicular to the surface of the substrate as taught by '106 in apparatus '315 in view of '866 to have yield the predictable result of drying the surface of the substrate.

23. Claims 79 and 95: '106 teaches that the nozzles can be moveable from the outer area of the wafer to the interior of the wafer (fig. 1).

24. Claims 80 and 96: '106 teaches that the arm can have a variable speed ([0050]).

25. Claims 81 and 82: The examiner takes official notices that valves are commonly used to regulate the passage of fluid (i.e. gas or liquid) thus allowing the amount of fluid to pass to be controlled. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a valve in the drying gas supply system in apparatus '315 in view of '866 and '106 to have controlled the gas passing through the system. Claims directed to apparatus must be distinguished from prior art in terms of structure rather than function. *In re Danly*, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA). "[A]pparatus claims cover what a device is not what a device does" *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990), meaning that the drying gas is capable of being shut off when the nozzle approaches the edge of the wafer in apparatus '315 in view of '866 and '106.

26. Claim 97: See claims 86 and 87 above. '106 teaches that the gas is applied to the substrate and the arm moves the nozzle applying the gas ([0049] and [0050]) thus ensuring that the gas is applied to the surface of the substrate ([0050]). It would have been obvious to one of ordinary skill in the art at the time the invention was made in apparatus '315 in view of '866 and '106 to have stop the gas supply before the edge of the wafer to make sure the drying gas is only applied to the wafer surface not the surrounding area.

**Claims 83 and 84 rejected under 35 U.S.C. 103(a) as being unpatentable over Davis et al (U.S. 7350,315) as applied to claims 62 above, further in view of in view of Maekawa et al (U.S. 5,868,866) and Olgado et al (U.S. pgpub 2003/0129850, hereafter '850).**

'315 teach all the limitation of claim 62.

27. Claim 83: See claims 77-82 above. '315 does not specify how the actual apparatus is controlled. '850 is a substrate processing apparatus. '850 teaches using a microprocessor controller to control the different operations of the apparatus ([0051], [0053], [0063] and [0068]). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have included a microprocessor controller as taught by '850 in apparatus '315 in view of '866 and '106 to have controlled the different conditions of operations.

28. Claim 84: See claim 83 above. '106 teaches using multiple gas nozzles (fig. 2). Claims directed to apparatus must be distinguished from prior art in terms of structure rather than function. *In re Danly*, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA). "[A]pparatus claims cover what a device is not what a device does" *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have had the controller to controller the gas rate at different nozzles.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SAMUEL A. WALDBAUM whose telephone number is (571)270-1860. The examiner can normally be reached on M-TR 6:20-3:50, F 6:30-10:30 est.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland can be reached on 571-272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/S. A. W./  
Examiner, Art Unit 1792

/Michael Cleveland/  
Supervisory Patent Examiner, Art Unit 1792